

Appln. No. 09/833,017  
Amendment

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1 - 22. (Canceled).

23. (Currently amended) The polypeptide of claim 24 comprising a *S.mutans* competence signal peptide having the amino acid sequence of SEQ ID NO:4.

24. (Currently amended) ~~A~~ An isolated polypeptide comprising ~~all or part of an~~ the amino acid sequence ~~in~~ of SEQ ID NO:2 or SEQ ID NO:4 and having *S.mutans* competence signal peptide activity.

25. (Currently amended) ~~A~~ An isolated polypeptide ~~variant of SEQ ID NO:2 or SEQ ID NO:4~~ having at least 30% 40% amino acid sequence identity to SEQ ID NO:2 and having competence signal peptide activity or having activity for inhibiting the competence signal activity of the polypeptide of SEQ ID NO: 2 or 4.

26. (Currently amended) ~~The polypeptide variant of claim 25 which is recombinantly produced~~ An isolated recombinant polypeptide comprising the amino acid sequence of SEQ ID NO: 2 or SEQ ID NO:4 which has *S.mutans* competence signal peptide activity.

27. (Currently amended) The polypeptide ~~variant of claim 25 having greater than 50%~~ 45% sequence identity to SEQ ID NO:2 ~~or SEQ ID NO:4~~ and having *S.mutans* competence signal peptide activity.

28. (Currently amended) The polypeptide ~~variant~~ of claim 25, isolated from *S.mutans*.

29-37. (Canceled).

38. (Currently amended) The polypeptide of claim ~~24-58~~ having an amino acid sequence wherein 1 - 15 amino acids ~~of the polypeptide of claim 24~~ have been removed from the N- and/or

Appln. No. 09/833,017  
Amendment

COOH terminal of SEQ ID NO: 2 ~~or SEQ ID NO: 4~~, and having *S. mutans* competence signal peptide activity.

39. (Currently amended) The polypeptide of claim 38 having an amino acid sequence wherein 2 - 5 amino acids have been removed from the N- and/or COOH terminal of SEQ ID NO: 2 ~~or SEQ ID NO: 4~~, and having *S. mutans* competence signal peptide activity.

40. (Currently amended) The polypeptide of claim 38 wherein 6 - 10 amino acids have been removed from the N- and/or COOH terminal of SEQ ID NO: 2 ~~or SEQ ID NO: 4~~, and having *S. mutans* competence signal peptide activity.

41. (Currently amended) The polypeptide of claim 38 wherein 10 - 15 amino acids ~~of the polypeptide of claim 24~~ have been removed from the N- and/or COOH terminal of SEQ ID NO: 2 ~~or SEQ ID NO: 4~~, and having *S. mutans* competence signal peptide activity.

42. (Currently amended) A synthetic polypeptide having competence signal peptide activity and comprising the 21-amino acid sequence of SEQ ID NO: 164.

43. (Currently amended) ~~A~~ An isolated polypeptide having an amino acid sequence wherein 1 - 15 amino acids of the amino acid sequence of SEQ ID NO: 2 ~~or SEQ ID NO: 4~~ have been modified to include up to 1 point mutation per each 10 amino acids of said polypeptide, said mutation chosen from the group consisting of an amino acid substitution, a D-amino acid substituted for an L-amino acid, a chemically modified amino acid, an N-terminal amino acid addition, a COOH-terminal amino acid addition, an N-terminal amino acid deletion, and a COOH-terminal amino acid deletion, said polypeptide having *S. mutans* competence signal peptide activity.

44. (Previously presented) The polypeptide of claim 43 wherein each said mutation comprises substitution with another amino acid.

45. (Currently amended) The polypeptide variant of claim 25 having greater than 60% sequence identity to SEQ ID NO: 2, and having competence signal peptide activity or having activity for inhibiting the competence signal activity of the polypeptide of SEQ ID NO: 2 or 4.

Appln. No. 09/833,017  
Amendment

46. (Currently amended) The polypeptide ~~variant~~ of claim 45 having greater than 90% sequence identity to SEQ ID NO: 2, and having competence signal peptide activity or having activity for inhibiting the competence signal activity of the polypeptide of SEQ ID NO: 2 or 4.
47. (Currently amended) The polypeptide of claim 24 or ~~the polypeptide variant of claim 25~~ having competence signal peptide activity.
48. (Currently amended) The polypeptide of claim 24 ~~or the polypeptide variant of claim 25~~ having activity for inhibiting the competence signal activity of the polypeptide of SEQ ID NO: 2 or 4.
49. (Previously presented) The polypeptide of claim 47 capable of binding to a bacterial histidine kinase cell surface receptor and activating said kinase.
50. (Currently amended) The polypeptide of claim 47 capable of promoting biofilm formation of said a bacteria.
51. (Currently amended) The polypeptide of claim 47 capable of promoting acid tolerance in said a bacteria.
52. (Currently amended) The polypeptide of claim 47-51 wherein said bacteria comprises *Streptococcus mutans*.
53. (Previously presented) The polypeptide of claim 48 capable of competitively inhibiting the binding of a peptide having SEQ ID NO. 4 to a bacterial histidine kinase cell surface receptor.
54. (Currently amended) The polypeptide of claim 48 capable of inhibiting biofilm formation of said a bacteria.

Appln. No. 09/833,017  
Amendment

55. (Currently amended) The polypeptide of claim 48 capable of inhibiting acid tolerance in said a bacteria.
56. (Currently amended) The polypeptide of claim 48-55 wherein said bacteria comprises *Streptococcus mutans*.
57. (Canceled)
58. (New) An isolated polypeptide comprising a fragment of SEQ ID NO: 2 and having *S. mutans* competence signal peptide activity.
59. (New) The polypeptide of claim 58 comprising a fragment of SEQ ID NO:4 and having *S. mutans* competence signal peptide activity.
60. (New) An isolated polypeptide having at least 40% amino acid sequence identity to SEQ ID NO:4 and having competence signal peptide activity or having activity for inhibiting the competence signal activity of the polypeptide of SEQ ID NO: 2 or 4.
61. (New) The polypeptide of claim 60 having greater than 45% sequence identity to SEQ ID NO:4 and having *S.mutans* competence signal peptide activity
62. (New) The polypeptide of claim 58 having an amino acid sequence wherein 1 - 15 amino acids have been removed from the N- and/or COOH terminal of SEQ ID NO: 4, and having *S.mutans* competence signal peptide activity.
63. (New) The polypeptide of claim 58 having an amino acid sequence wherein 2 - 5 amino acids have been removed from the N- and/or COOH terminal of SEQ ID NO: 4, and having *S.mutans* competence signal peptide activity.
64. (New) The polypeptide of claim 58 wherein 6 - 10 amino acids have been removed from the N- and/or COOH terminal of SEQ ID NO:4, and having *S.mutans* competence signal peptide activity.

Appln. No. 09/833,017  
Amendment

65. (New) The polypeptide of claim 58 wherein 10 - 15 amino acids ~~of the polypeptide of claim 24~~ have been removed from the N- and/or COOH terminal of SEQ ID NO:4, and having *S.mutans* competence signal peptide activity.

66. (New) An isolated polypeptide having an amino acid sequence wherein 1 - 15 amino acids of the amino acid sequence of SEQ ID NO:4 have been modified to include up to 1 point mutation per each 10 amino acids of said polypeptide, said mutation chosen from the group consisting of an amino acid substitution, a D-amino acid substituted for an L-amino acid, a chemically modified amino acid, an N-terminal amino acid addition, a COOH-terminal amino acid addition, an N-terminal amino acid deletion, and a COOH-terminal amino acid deletion, said polypeptide having *S. mutans* competence signal peptide activity.

67. (New) The polypeptide of claim 25 having greater than 60% sequence identity to SEQ ID NO: 4, and having competence signal peptide activity or having activity for inhibiting the competence signal activity of the polypeptide of SEQ ID NO: 2 or 4.

68. (New) The polypeptide of claim 45 having greater than 90% sequence identity to SEQ ID NO: 4, and having competence signal peptide activity or having activity for inhibiting the competence signal activity of the polypeptide of SEQ ID NO: 2 or 4.